

# LADWP: Climate Impacts and Adaptation

## California Energy Commission

June 4, 2013  
Gretchen Hardison  
Energy Efficiency/Community Partnerships



# Outline



- Background on LADWP
- Recent City/LADWP Climate Activities
- Climate/Adaptation Studies
  - Climate Change Temperature Study
  - Sea Level Rise Vulnerability Study
  - Additional LADWP Efforts
- Adaptation Actions/Next Steps

**Largest municipal utility in the nation, serving a population of 4 million within a 465 square mile area.**

- 1.2 M Residential Customers
- 178,217 Commercial Customers
- 12,382 Industrial Customers



# Recent City Climate Activities

- **1990, 2004-2007 – Municipal Greenhouse Gas Emissions Inventories**
- **2007 – Green LA: An Action Plan to Lead the Nation in Fighting Global Warming**
- **2008 – Climate LA: Implementation of the Green LA Plan**
  - **LADWP major role as electricity provider**
- **2010 – Adaptation Efforts Begin**

# Stakeholders & Working Groups

- **City Department Working Groups**
- **Los Angeles Regional Collaborative**
  - ◉ Los Angeles County
  - ◉ Cities, public agencies, utilities
- **Partnerships with Universities**
  - ◉ UCLA – Climate Change in the LA Region
  - ◉ USC Sea Grant – Sea Level Rise Vulnerability Study

# Mid-Century Warming in the Los Angeles Region

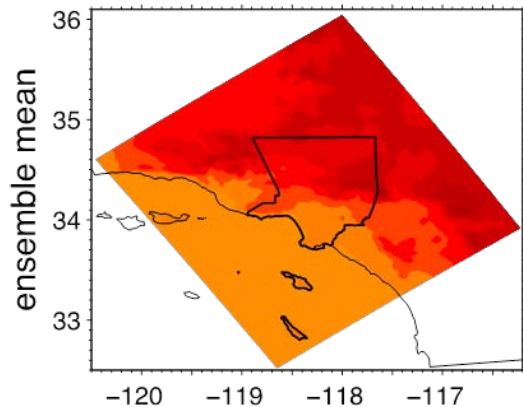
- **Global climate models too coarse for local needs**
- **UCLA team led by Dr. Alex Hall developed state of the art regional modeling technique**
  - 19 global climate models downscaled for LA
  - Incorporates local topography and coastline information
  - High-resolution: 2 km grids
  - 2 GHG emissions scenarios for years 2041-2060 compared to baseline (1981-2000) scenario:
    - Business as usual scenario
    - Mitigation scenario

# Mid-Century Warming, continued

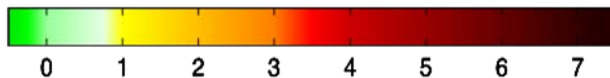
- Modeling & statistical analysis produced an ensemble-mean warming scenario, deemed the most likely warming impacts
- The average warming over the entire region is roughly 4.6° F, with 95% confidence that the warming will lie between 1.7 and 7.5°F
- Variation between coastal and inland areas
- Coastal and central locations will see 2-3 times the number of extremely hot days
- Higher elevations and inland areas will see 3-5 times the number of extremely hot days

# Mid-Century Warming, continued

RCP8.5  
emissions  
scenario



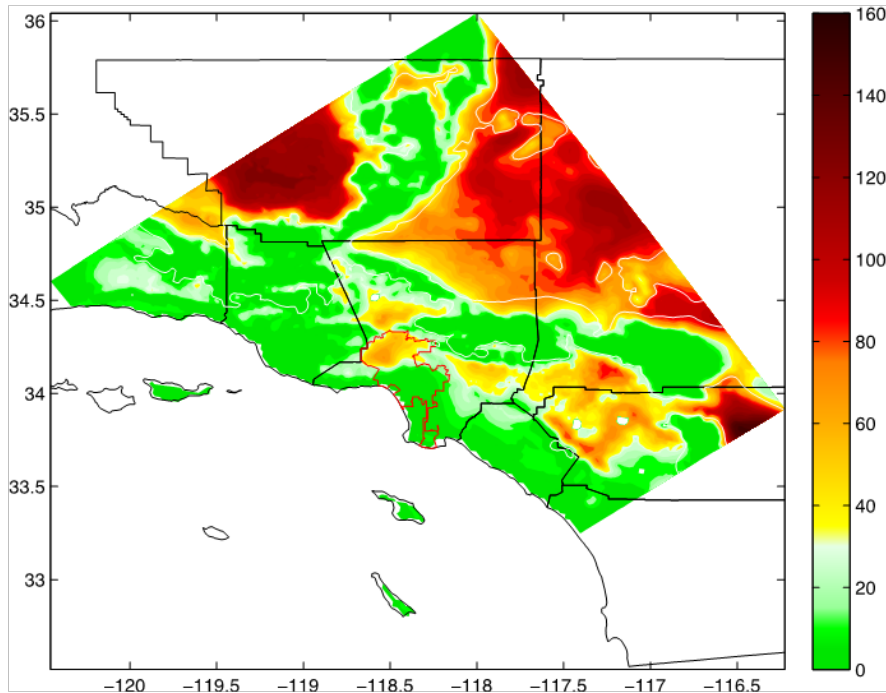
We can average the values from all the models, to produce an annual-mean, ensemble-mean warming under RCP8.5. Note the greater warming inland than at the coast. *We deem this the **most likely** warming, based on present knowledge.*



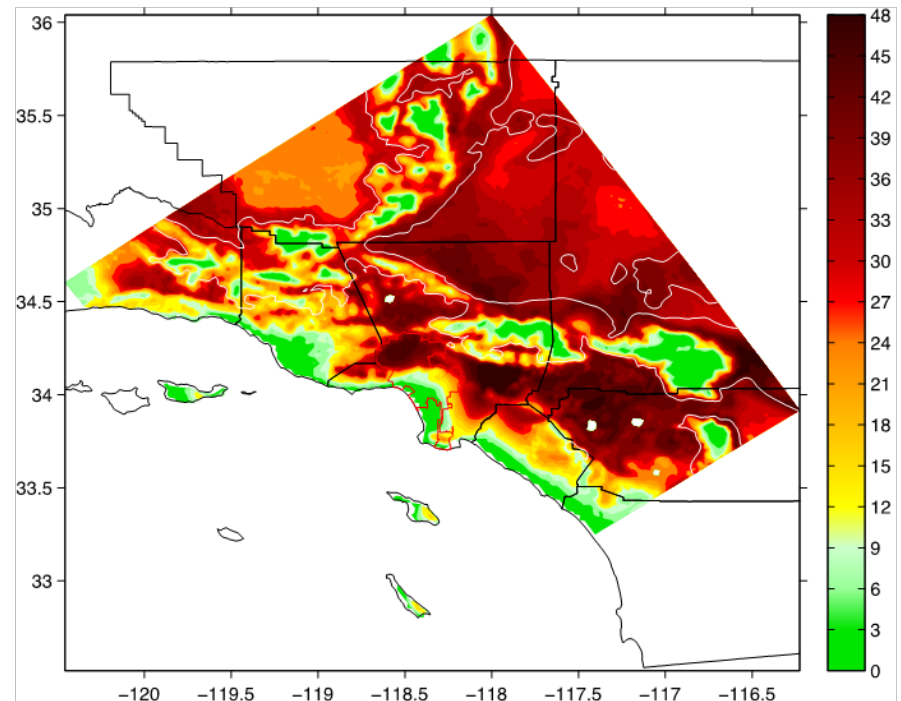


# Mid-century increases in the number of extremely hot days...

Number of extremely hot days in the baseline (1981-2000) climate



Ensemble-mean (most likely) increase in number of extreme heat days per year



Here is the most likely increase in number of days with extremely hot maximum temperatures ( $>95^{\circ}\text{F}$ ). The valleys (e.g., San Fernando, San Gabriel, San Jacinto and Coachella valleys) are significantly affected, as are deserts. The coastal zone is less affected because it has a lower temperature in the baseline climate, and it generally warms less.

# Sea Level Rise Vulnerability Study for the City of Los Angeles

- Summary of initial research of sea level rise/associated flooding for 3 coastal regions:
  - ◆ Pacific Palisades
  - ◆ Venice/Playa del Rey/LAX
  - ◆ San Pedro/Wilmington/Port of Los Angeles
- Team led by Sea Grant program of USC, in partnership with Los Angeles Regional Collaborative, ICLEI and City of LA
- Sophisticated model developed by US Geological Survey
  - ◆ Based on January 2010 “10-year” storm
  - ◆ Incorporates information on critical coastal infrastructure
- Preliminary examination of physical, social & economic impacts

# Sea Level Rise Vulnerability, continued

- Sea level rise in LA matches global projections
  - ◆ 12-23 CM (5-9 inches) from 2000 to 2050
  - ◆ 39-76 cm (15-30 inches) from 2000 to 2100
  - ◆ Potentially exacerbates damage from storm surge/tides
- Roads/water systems (wastewater, stormwater, potable water) are vulnerable to sea level rise and storm surge impacts
- Cultural assets (museums, parks, open space) along coast also vulnerable
- Port and energy facilities have relatively low vulnerability to sea level rise

# Sea Level Rise Vulnerability, continued

- **Bureau of Sanitation commissioned engineering studies to plan for potential flooding at critical locations**
- **Port of LA conducting additional sea level rise study**
- **LADWP previously conducted tsunami study**
- **Social impacts: greater potential impacts in San Pedro, Wilmington, Venice**
- **Economic studies show very limited damage to transportation and utility systems**

# Mitigation and Adaptation Planning in Los Angeles

- **AdaptLA: City-led, science-based, participatory process**
- **Provides methodology to help identify vulnerabilities and mechanisms for moving forward**
- **Three teams:**
  - **Adaptation Planning Team (steering committee)**
  - **City Adaptation Leadership Team (City depts.)**
  - **Regional Stakeholder Working Group**
- **LA Regional Collaborative convenes discussion/ stakeholder groups**
- **Now looking to develop more specific actions**

# Energy Efficiency and Next Steps

## LADWP:

- Increased funding for Energy Efficiency Programs
- Commitment to achieve at least 10% energy savings by 2020
- Offering “Cooling” incentives
  - ◉ Residential Cool Roof rebate (single- & multi-family)
  - ◉ Whole House Fan
- Looking into Cool Pavements
- Supporting Million Trees LA program
  - ◉ Energy savings/Carbon calculator tool (US Forest Service)
  - ◉ Demonstrate and improve tools to measure savings

# Contact Information



THANK YOU!

Visit our website: [www.LADWP.com](http://www.LADWP.com)

Gretchen Hardison (213) 367-2490 Email [Gretchen.Hardison@ladwp.com](mailto:Gretchen.Hardison@ladwp.com)